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## THE JANUARY MEETING OF THE KANSAS SECTION.

The seventh regular meeting of the Kansas Section was held at the Central High School, Topeka, Kansas, on January 22, in conjunction with a meeting of the Kansas Association of Mathematics Teachers. Two sessions were held, the first of which was a joint session with the Kansas Association of Mathematics Teachers. Professor Shirk presided at the morning session and Professor Garrett at the afternoon session.

The attendance was fifty-two, including the following twenty-one members of the Association:

C. H. Ashton, Florence Black, R. H. Carpenter, Lucy Dougherty, W. H. Garrett, W. A. Harshbarger, T. B. Henry, Emma Hyde, T. Lindquist, Anna Marm, U. G. Mitchell, H. S. Myers, P. S. Pretz (institutional representative), B. L. Remick, D. H. Richert, J. A. G. Shirk, G. W. Smith, E. B. Stouffer, W. T. Stratton, J. J. Wheeler, A. E. White.

The following officers were elected for the coming year: Chairman, Professor SHIRK; Vice-Chairman, Miss HYDE; Secretary, Professor STOUFFER. It was voted to hold the next meeting at Topeka in January, 1922, in conjunction with the meeting of the Kansas Association of Mathematics Teachers.

The following eight papers were read:

- (1) "Report of the Kansas committee coöperating with the National Committee on Mathematical Requirements" by Professor U. G. MITCHELL, University of Kansas;
- (2) "Report on the preparation of college freshmen in entrance algebra" by Professor W. H. GARRETT, Baker University;
- (3) Question box:
  - (a) "What high school teachers want to know about college mathematics" by Professor C. H. ASHTON, University of Kansas;
  - (b) "What college teachers want to know about high school mathematics" by Miss LUCY T. DOUGHERTY, High School, Kansas City;
- (4) "Mathematics and statistics" by Professor W. T. STRATTON, Kansas State Agricultural College;
- (5) "Hyperbolic functions" by Professor H. S. MYERS, Southwestern College;
- (6) "A problem in calculus" by Professor A. E. WHITE, Kansas State Agricultural College;
- (7) "Division of credit between college algebra, trigonometry, analytics and calculus" by Professor W. A. HARSHBARGER, Washburn College.

Most of the papers led to considerable discussion. Abstracts of the papers and discussions follow below, the numbers corresponding to numbers in list of titles.

1. The Kansas committee coöperating with the National Committee on Mathematical Requirements was first appointed in January, 1920, by the Kansas

Association of Mathematics Teachers at the request of the National Committee. Later the same committee was authorized to act for the Kansas Section of the Mathematical Association of America. The committee consists of Emma Hyde, Kansas State Agricultural College, Lucy T. Dougherty, Kansas City, Kansas, High School, Theodore Lindquist, Kansas State Normal School, and U. G. Mitchell, University of Kansas, Chairman.

As an aid in making clear his report Professor Mitchell brought mimeographed summaries of the work of the National Committee and of the Kansas committee and had them distributed. He reviewed briefly some of the reasons leading to the appointment of the National Committee, the scope of the Committee's work and the principles formulated for its guidance. The reports already released by the National Committee were discussed and a list of those to appear later given. The Kansas committee was reported to have held three meetings and planned four reports to be sent to the National Committee. One of these reports had been completed and sent in, two others had been discussed and formulated but not yet put into final form and the fourth had been discussed but not yet formulated.

2. Professor Garrett presented further results of an investigation in which he has been engaged since 1912. The data secured from over five hundred papers written in September, 1920, by freshmen students in Baker University, Kansas State Agricultural College, University of Kansas and Washburn College, was presented in graphic form and compared with the results secured previously. The measure used was a set of fifteen problems in elementary algebra, first used by Professor Garrett in 1912. The results show a slight improvement over 1912 in the number of correct solutions to three of the problems, no improvement in three others, and much poorer results in the remaining nine problems. The problems included simple varieties of factoring, reduction of fractions, solution of linear and quadratic equations, simplification of radicals and fractions containing irrational denominators and evaluation of quantities containing zero, negative and fractional exponents. Of the fifteen hundred papers from Kansas students which have been examined, there has been just one perfect paper.

3. Those present were given opportunity to write out the questions they desired to have answered on either of the subjects. The questions concerning college mathematics were handed to Professor Ashton who answered a number of them. He especially emphasized the fact that the student who does not take all the regular high school courses in mathematics is handicapped if he enters an engineering school. Professor Ashton called on Professor Mitchell and Professor Stouffer to answer one question each.

Miss Dougherty in answering the questions concerning high school mathematics brought out the fact that the drift away from mathematics in high school is not as rapid as sometimes thought.

4. Professor Stratton traced briefly the historical development of the idea of statistics from the beginning of organized nations down to the present time, pointing out a number of mathematical topics that are employed in the scientific

treatment of the subject, and some of the famous mathematicians who have contributed directly or indirectly to the development of its mathematical treatment. He showed by means of tables and graphs the methods usually employed in handling correlated data, such as the length and weight of ears of corn. He also developed mathematically two of the most commonly used units of correlation; viz., the correlation ratio and the coefficient of correlation as defined by Karl Pearson.

5. Professor Myers defined hyperbolic functions both analytically and geometrically. He derived the identities between hyperbolic functions, showed their period and obtained the formulæ for their integration. Some of the numerous uses for hyperbolic functions were pointed out.

6. The problem may be stated as follows: A large pulley of radius  $b$  turns by means of a belt a smaller pulley of radius  $a$ . At a certain instant a radius of the larger pulley makes an angle with a radius of the smaller pulley. As the pulleys turn, in what position will the outer ends of the spoke be closest together? Professor White showed that the distance may be a maximum or a minimum when the radii are parallel or when the radii form an isosceles triangle with the line of centers.

7. Professor Harshbarger discussed briefly the growth of the present courses with the division of time brought about by changing high school curricula. The plan of college algebra, three hours, trigonometry, two hours, analytics, five hours, and calculus, five hours, was compared to two other plans. The first suggested college algebra, five hours, trigonometry, two hours, and analytics, three hours, for the freshman year, with five hours of calculus for the first half of the sophomore year. The second plan suggested algebra, three hours, and trigonometry, two hours, for the first semester with analytics, four hours, and calculus, six hours, during the next two semesters.

Discussion on this subject was participated in by Professor Ashton, Professor Mitchell, Professor Remick, Professor Stouffer, Professor Stratton, and Professor White.

E. B. STOUFFER, *Secretary-Treasurer.*

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#### THE DECEMBER MEETING OF THE MARYLAND-VIRGINIA-DISTRICT OF COLUMBIA SECTION.

The eighth regular meeting of the Maryland-Virginia-District of Columbia Section of the Mathematical Association of America was held at the U. S. Naval Academy, Annapolis, Md., on Dec. 11, 1920. The meeting consisted of two sessions with Professor L. S. Hulbert presiding.

The attendance was forty-seven, including the following thirty-four members of the Association: O. S. Adams, J. J. Arnaud, R. N. Ashmun, Clara L. Bacon, Sarah Beall, A. A. Bennett, G. A. Bingley, C. C. Bramble, J. A. Bullard, P. Capron, G. R. Clements, A. Cohen, G. H. Cresse, F. W. Darling, L. S. Dederick,